

## 2.0

# PROJECTS FOR THE RADIOACTIVE TANK WASTE REMEDiation FOCUS AREA

Several innovative characterization technologies are needed to solve key problem areas in the Radioactive Tank Waste Remediation Focus Area (TFA). They include: sensors integration with deployment systems for in situ determination of chemical and physical properties of tank waste; in-tank geophysical methods for imaging waste matrix characteristics; and real-time, on-line systems to monitor and control retrieval, transfer, and treatment operations. The sensor deployment systems include cone penetrometers, the Light Duty Utility Arm (LDUA), and other mechanic arm delivery systems.

Many technologies are being developed in FY96 to help address the identified problem areas. An acoustic monitoring system is being deployed on a mixer pump to determine the mixing radius and the density of mixing fluids. A miniaturized resonator system is also being developed for monitoring the density and viscosity of supernate and liquids. In the area of sensor deployment systems, a specially instrumented cone penetrometer probe is being developed for insertion into the tanks via risers. A new solicitation will be issued for technologies that can sample waste throughout the tank and not just under the risers. The electromagnetic induction system for deployment in liquid observation wells (LOWs) and the neutron activation probes for deployment in LOWs or by cone penetrometer truck (CPT) have been developed for monitoring moisture content of tank waste. Sensors previously developed for monitoring contaminant plume in the subsurface are being considered for integration with the CPT and LDUA for in-tank deployment. One notable technology is the cone penetrometer Raman probe with neural network data analysis. Several on-line sensors are under development for monitoring fluid transport properties; i.e., viscosity, density, and volume percent solids. In addition, an electric resistivity tomography technique is being developed for monitoring tank leaks during the sluicing retrieval of tank waste.

## CONTACTS

### Paul Wang

Technical Program Coordinator  
Ames Laboratory  
106 Spedding Hall  
Ames, IA 50011  
(515) 294-6773